

Homework Review

State The Degree of the Function

$$f(x) = (x+5)(x-6) + 4$$

$$f(x) = x^2 - 6x + 5x - 30 + 4$$

$$= x^2 - x - 26$$

Degree = 2
Quadratic
 $2 \sim 0$ a, b, c

$$f(x) = 3x - 6$$

= Degree 1

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5. Evaluate $f(4)$ for each of the following.

a) $f = \{(1, 5), (3, 2), (6, 1), (6, 2)\}$ d)

x	2	6	8
f(x)	4	8	12

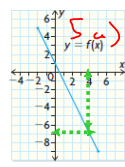
c) $f(x) = 3x^2 - 2x + 1$

x y x $f(x)$

$f(x) = 3x^2 - 2x + 1$

$f(4) = 3(4)^2 - 2(4) + 1$

$f(4) = 41$



$x = 2x$

$f(x) = 3x^2 - 2x + 1$

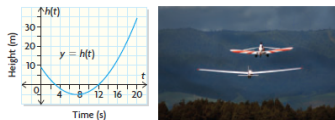
$f(2x) = 3(2x)^2 - 2(2x) + 1$

$f(2x) = 3(4x^2) - 4x + 1$

$f(2x) = 12x^2 - 4x + 1$

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16. A glider is launched from a tower on a hilltop. The height, in metres, is negative whenever the glider is below the height of the hilltop. The equation representing the flight is $h(t) = \frac{1}{4}(t-3)(t-12)$, where time, t , is measured in seconds.



- a) What does $h(0)$ represent?
b) What does $h(3)$ represent?
c) When is the glider at its lowest point? What is the vertical distance between the top of the tower and the glider at this time?

$h(t) = \frac{1}{4}(t-3)(t-12)$

$h(0) = \frac{1}{4}(0-3)(0-12)$

$= \frac{1}{4}(-3)(-12)$

$= \frac{1}{4}(+36)$

$= \frac{36}{4}$

$h(0) = 9$

$h(3) = 0$

$h(9) = -5$

$h(0) - h(9) = 9 - (-5)$
 $= 14m$

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12. $f(x) = 2(x-3)^2 - 1$

a) $f(0)$

$f(0) = 2(0-3)^2 - 1$

$f(0) = 2(-3)^2 - 1$

$f(0) = 2(9) - 1$

$f(0) = 18 - 1$

$f(0) = 17$

b) $f(0) = y \text{ int}$

c) $f(x) = 6$

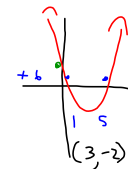
$f(1) = 6$

$f(5) = 6$

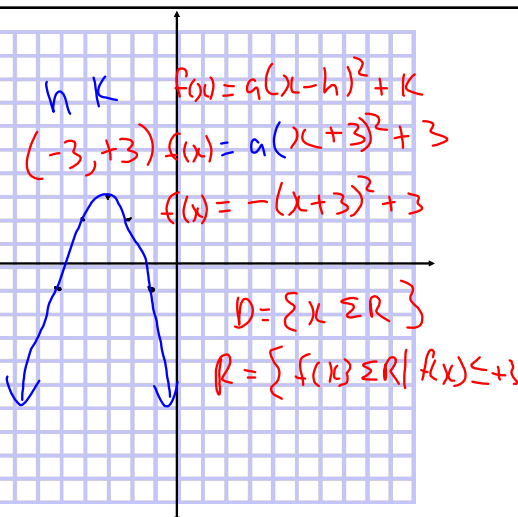
d) $f(3) = 4$ $f(3) = -2$
not a solution

$D = \{x \in \mathbb{R}\}$

$R = \{f(x) \in \mathbb{R} \mid -2 \leq f(x)\}$



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Graphing Quadratic Functions

Using Transformations

Base Parabola

$f(x) = x^2$

$f(x) = a(x-h)^2 + k$

(h, k)

$(0, 0)$

$a = +1$

Over 1 up 1

Over 2 up 4

Over 3 up 9

Over 4 up 16

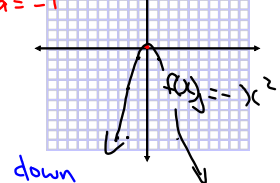
Vertex Form

$f(x) = a(x-h)^2 + k$

Reflection

$f(x) = -x^2$

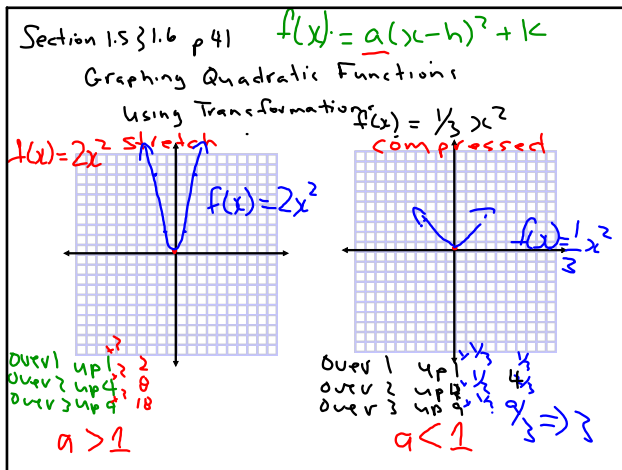
$a = -1$



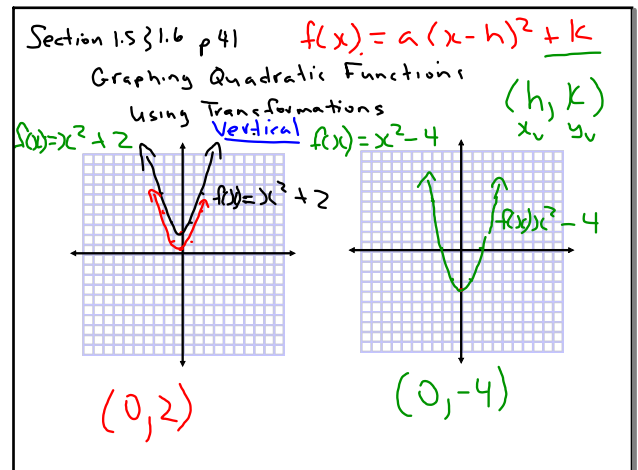
down

a value -ve

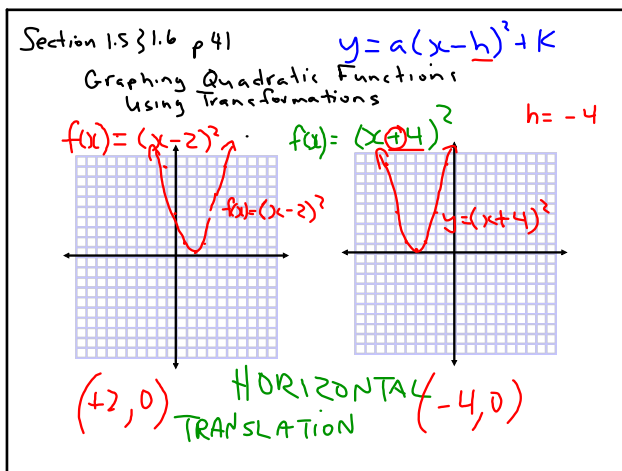
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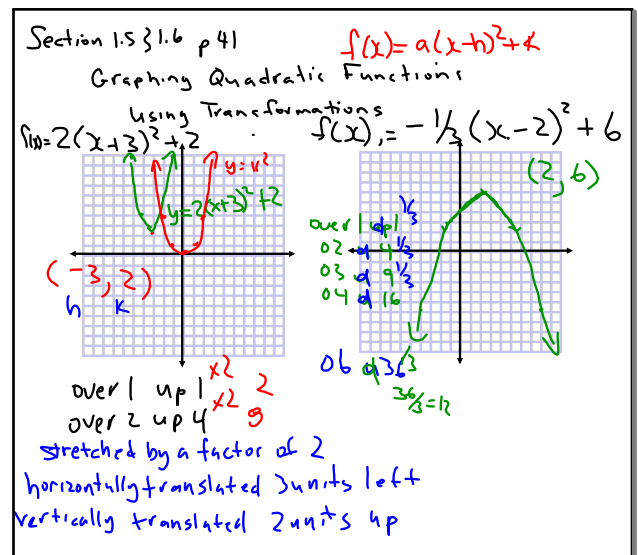
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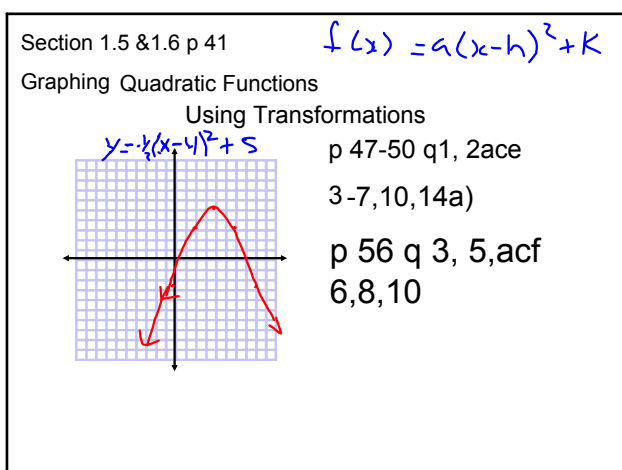
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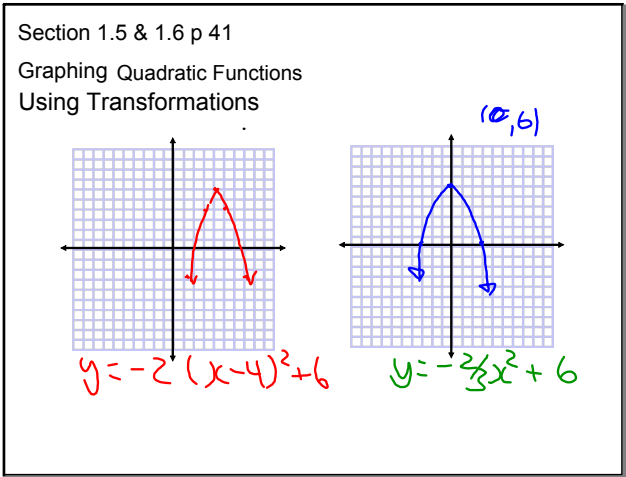
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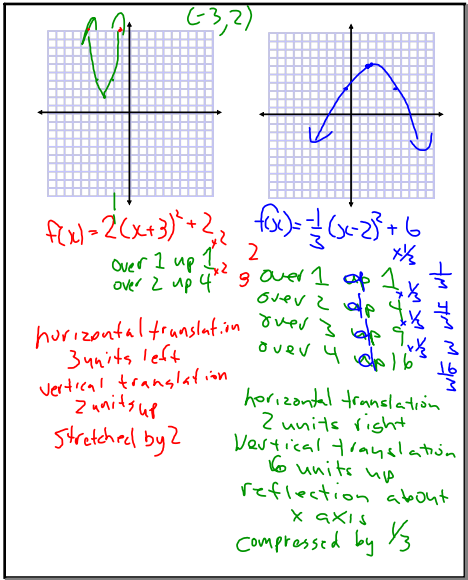
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10. A baseball is hit from a height of 1 m. The height of the ball is modelled by the function $h(t) = -5t^2 + 10t + 1$, where t is time in seconds.
- Graph the function for reasonable values of t .
 - Explain why the values you chose for t in part (a) are reasonable.
 - What is the maximum height of the ball?
 - At what time does the ball reach the maximum height?
 - For how many seconds is the ball in the air?
 - For how many seconds is the ball higher than 10 m?
 - Express the domain and range in set notation.

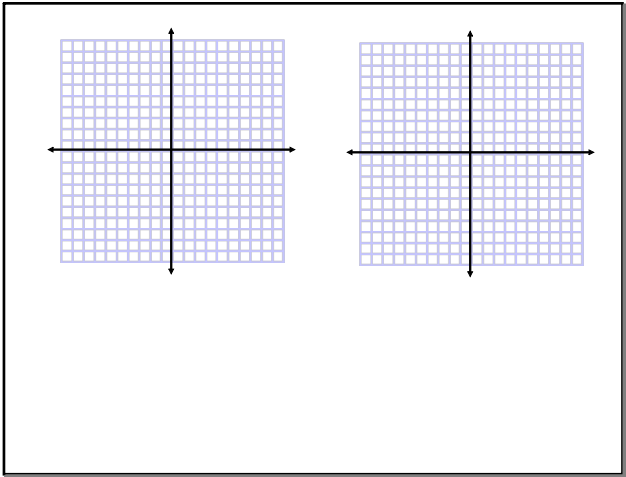
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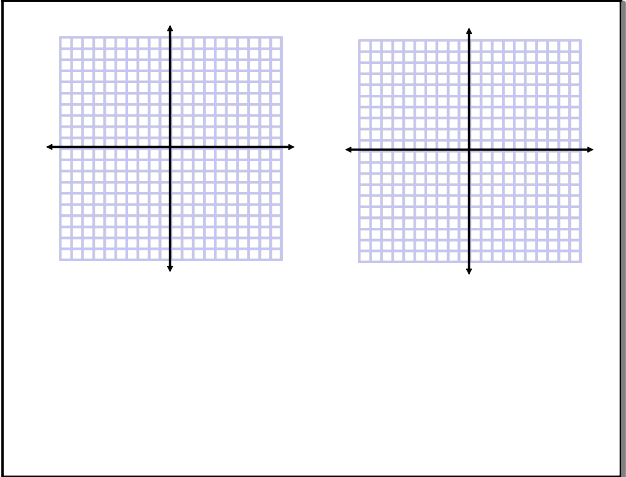
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